

# **Stormwater Rulemaking Briefing**

**US Environmental Protection Agency**



# Agenda

- Regulatory Authority and History of Stormwater Rulemaking
- Drivers for Stormwater Rulemaking
- Key Stormwater Rulemaking Activities to Date
- Rulemaking Options Under Consideration

# 402(p) of Clean Water Act

- Section 402(p) established phased approach to permitting certain stormwater discharges
- Section 402(p)(4) required EPA to establish permit application requirements for industrial and medium and large municipal separate storm sewer discharges (100,000 population and greater)
- Section 402(p)(5) required EPA to
  - conduct a study to identify other discharges, assess their pollutant loadings and establish methods to control the pollutants and
  - submit the results in a report to Congress.
- Section 402(p)(6) provides authority for EPA to regulate other stormwater sources, based on the study, “to protect water quality”

# 402(p)(6)

Not later than October 1, 1994, the Administrator, in consultation with State and local officials, shall issue regulations (based on the results of the studies conducted under paragraph 5)) which designate stormwater discharges, other than those discharges described in paragraph (2), to be regulated to protect water quality and shall establish a comprehensive program to regulate such designated sources. The program shall, at a minimum, (A) establish priorities, (B) establish requirements for State stormwater management programs, and (C) establish expeditious deadlines. The program may include performance standards, guidelines, guidance, and management practices and treatment requirements, as appropriate.

# 402(p)

- Authorizes EPA to designate stormwater discharges “other than those discharges described in paragraph (2) [of 402(p)] to be regulated to protect water quality...”
- Under 402(p)(6) EPA has discretionary authority to regulate discharges that are currently unregulated including unregulated MS4s

# Phase I Stormwater Regulations

- Finalized in 1990
- Regulates stormwater discharges from:
  - 10 categories of industrial operations including construction activity disturbing 5 acres or more
  - Medium and large municipal separate storm sewer systems (MS4s) in areas that serve 100,000 or more people
- Established:
  - Permit application requirements and deadlines
  - Requirements for a municipal stormwater management plan
  - Permit exclusion for industrial activities that are not exposed to stormwater
- 761 Phase I MS4s

# Phase II Stormwater Regulations

- Finalized in 1999
- Regulates stormwater discharges from:
  - Small MS4s, defined as:
    - An MS4 not already covered by an MS4 permit and
    - Located in an “urbanized area” as defined by the Bureau of Census, or
    - Designated by the NPDES permitting authority on a case-by-case basis.
  - Construction activities disturbing between one and five acres
  - Requires NPDES permits for these discharges
- Established six minimum control measures for small MS4 permits:
  1. Public Education & Outreach
  2. Public Participation/Involvement
  3. Illicit Discharge Detection & Elimination
  4. Construction Site Runoff Control
  5. Post-Construction Runoff Control
  6. Pollution Prevention/Good Housekeeping
- Basis for regulation: 1995 Report to Congress and 402(p)(6) authority
- About 6,675 Phase II MS4s

# Current Status of Stormwater Impacts

Much progress has been made; however, significant challenges remain to protect water bodies from impact of stormwater discharges.

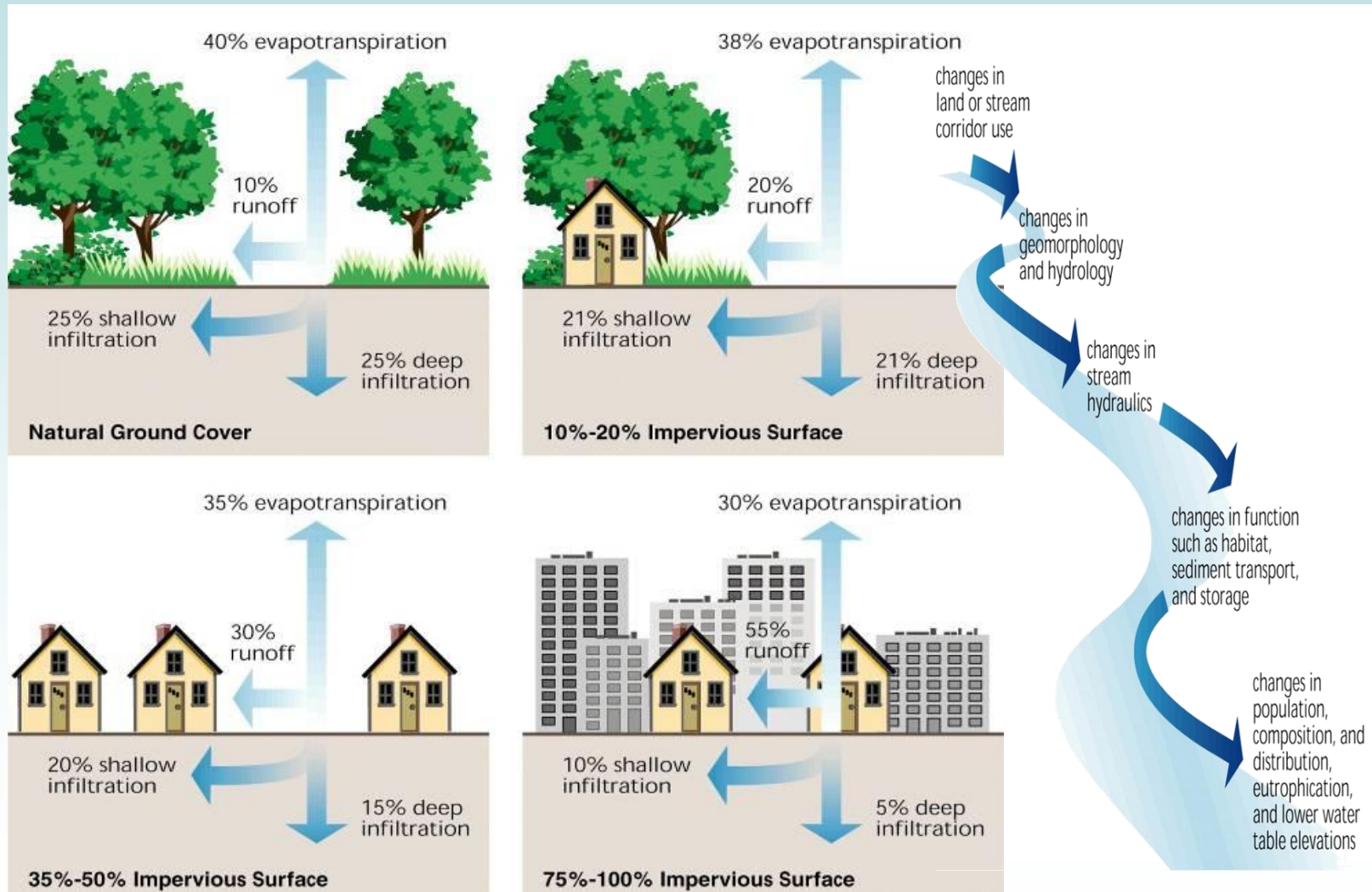
According to the 2004 Water Quality Inventory, urban stormwater discharge is the source of problems in:

- 22,559 miles, or 9.2% of all impaired rivers and streams
- 701,024 acres, or 6.7% of all impaired lakes
- 867 square miles, or 11.3% of all impaired estuaries

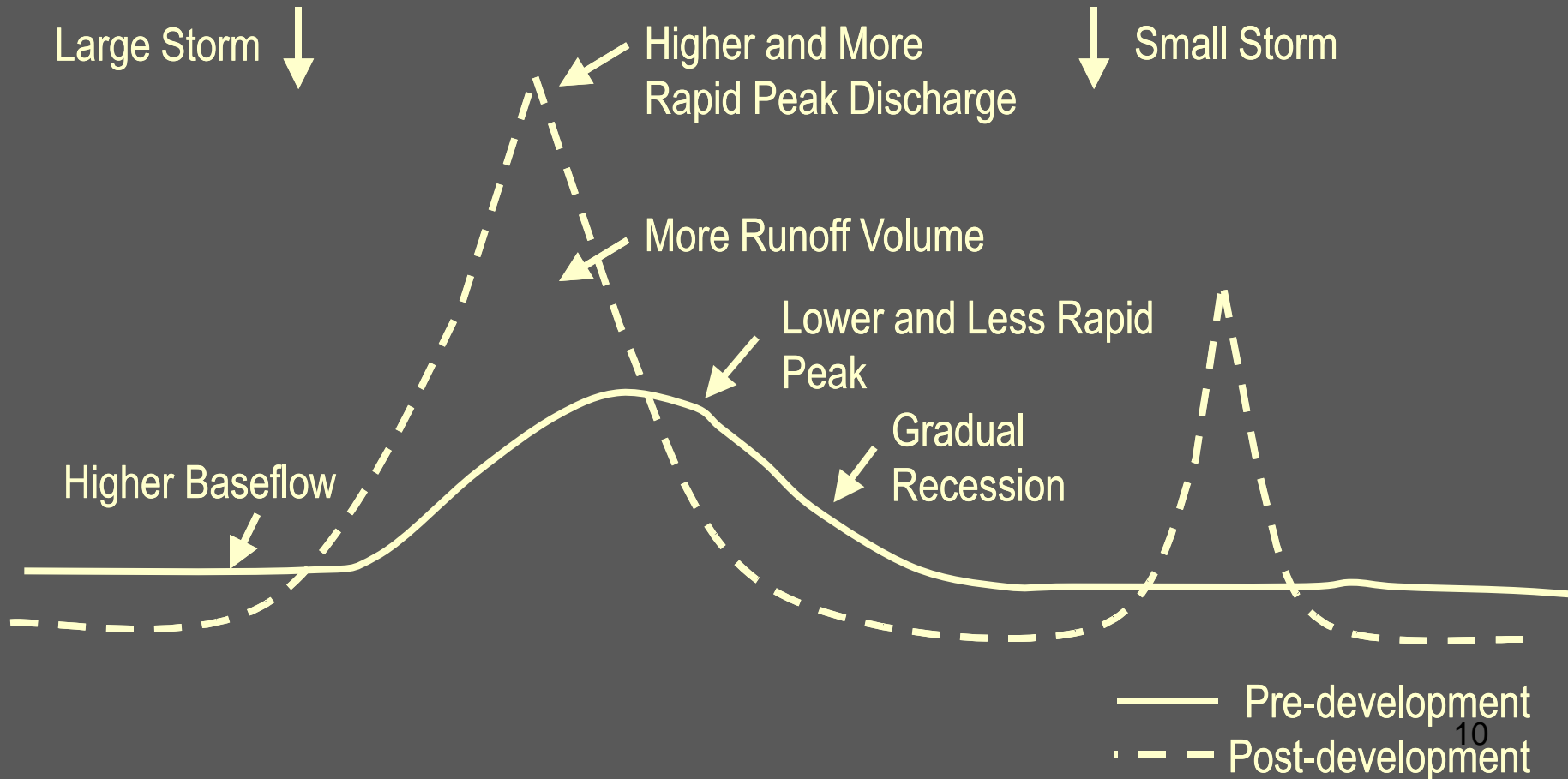




# Impacts of urbanization on stormwater runoff



# Consequences of Development to Urban Streams

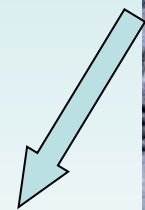


# Stormwater Management Issues

1. Increased amounts of stormwater and pollutants...



2. Enter the municipal separate storm sewer system (MS4) or is directly discharged to a nearby waterbody...

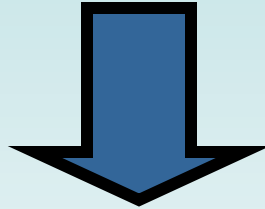


3. Which can lead to stream degradation and increased pollutants entering waterbodies



# New Approach

- Shift from the concept of moving stormwater as far away as quickly as possible in large, buried collection, storage & conveyance systems.



- Shift towards the concept of managing stormwater where it falls; using infiltration, evapotranspiration, and harvesting/use.

# Green Integrated Approaches

## Mimic Natural Hydrologic Site Conditions

Infiltration ~ Evapotranspiration ~ Capture & Use



- Protecting areas with natural ecological functions
- Amended soils
- Impervious cover removal
- Bioretention
- Permeable pavements
- Green roofs
- Cisterns & rain barrels
- Trees & expanded tree boxes
- Reforestation & restoration
- Infill & Redevelopment
- Parking & street designs
- Water Conservation



# Green Infrastructure Approaches



Green roof



Rain garden



Rain garden



Parking lot infiltration  
island



Open swale



# Green Infrastructure Approaches



Open swale, Portland, OR



Terraced open swale



Porous pavement sidewalk



Porous pavers,  
Philadelphia



Large cistern, Chicago



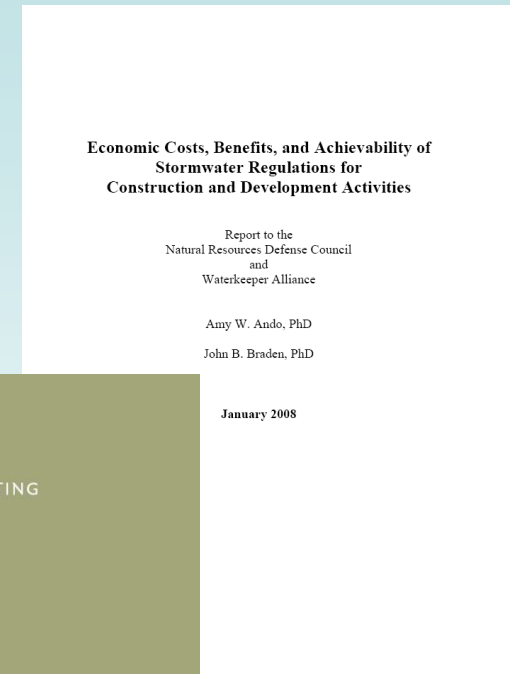
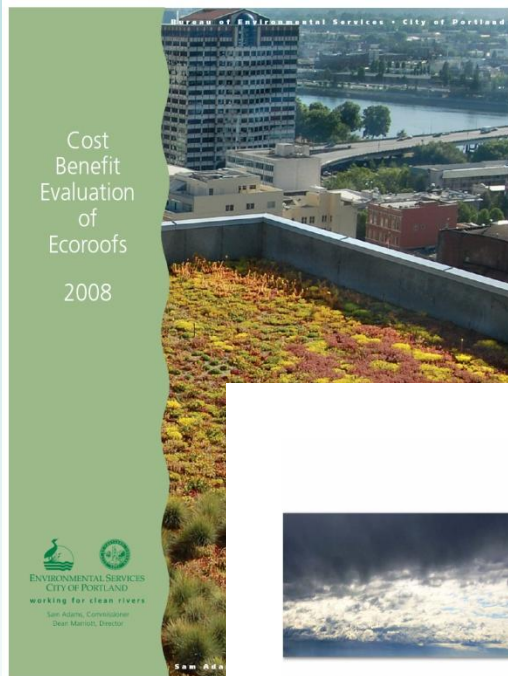
# Benefits of Green Infrastructure

- Improve Water Quality
- Improve Air Quality
- Reduce Urban Heat Island Effect
- Provide Energy Savings
- Recharge Groundwater – Increase Water Supply
- Increase livability of urban communities with more green space, create new jobs
- Provide Recreational Areas in Urban Environment
- Provide Habitat





# Studies on Benefits and Costs



**SUSTAINABLE  
RAINDROPS**  
Cleaning New York Harbor by  
Greening The Urban Landscape

Report Supervisor  
David Soggin  
Chief Investigator: Riverkeeper  
Report Author  
Mike Plumb  
Legal Issues,  
California Environmental Law Clinic



# Cost Savings

EPA has identified several examples where the use of LID has resulted in lower costs than grey infrastructure



## Reducing Stormwater Costs through Low Impact Development (LID) Strategies and Practices



# NRC Report *Urban Stormwater Management in the United States* (Oct. 08)

- Current approach unlikely to produce an accurate picture of the problem and unlikely to adequately control stormwater's contribution to waterbody impairment
- Requirements leave a great deal of discretion to dischargers to ensure compliance
- Poor accountability and uncertain effectiveness
- A more straightforward way to regulate stormwater contributions to waterbody impairment would be to use flow or a surrogate, like impervious cover, as a measure of stormwater loading

# National Research Council 2008 Stormwater Study Recommendations

- Efforts to reduce stormwater flow will automatically achieve reductions in pollutant loading.
- Flow is itself responsible for additional erosion and sedimentation that adversely impacts surface water quality.
- Stormwater control measures that harvest, infiltrate, and evapotranspire stormwater are critical to reducing the volume and pollutant loading of small storms.

# Energy Independence and Security Act of 2007

**“Sec. 438. Storm Water Runoff Requirements for Federal Development Projects.** The sponsor of any development or redevelopment project involving a Federal facility with a footprint that exceeds 5,000 square feet shall use site planning, design, construction, and maintenance strategies for the property to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.”

United States  
Environmental  
Protection Agency

Office of Water (4503T)  
Washington, DC 20460

EPA 841-B-09-001  
December 2009  
[www.epa.gov/owow/nps/lid/section438](http://www.epa.gov/owow/nps/lid/section438)



Technical Guidance on Implementing the  
Stormwater Runoff Requirements for  
Federal Projects under Section 438 of the  
Energy Independence and Security Act



EPA, in  
consultation with  
the Interagency  
Sustainability  
Working Group and  
other federal  
agencies,  
developed  
Technical  
Guidance, issued  
December 2009

# Green Infrastructure Implementation

- EPA's Green Infrastructure Initiative
  - Green Infrastructure Action Strategy
  - Green Infrastructure Partnership
- States are integrating green infrastructure principles into their permits
  - North Carolina      - Montana      - Maryland
  - New Jersey      - Oregon      - Wisconsin
  - Ohio      - Connecticut      - Kansas
  - West Virginia      - Maine      - Colorado
  - California      - Vermont      - Washington
  - Massachusetts      - New York
- Communities are adopting green infrastructure approaches
  - Philadelphia, PA
  - Milwaukee, WI
  - Chicago, IL
  - Portland, OR
  - Seattle, WA
  - Kansas City, MO
  - Louisville, KY
  - Washington, DC
  - Richmond, VA



# EPA Initiated Stormwater Rulemaking

- Impetus: The need to better protect water quality
- Published Federal Register notice describing rulemaking considerations, soliciting comment, and announcing listening sessions (Dec. 28, 2009)
- Schedule:
  - Proposal in Sept. 2011
  - Final Action in Nov. 2012





# Key Activities to Date

- Conducted five listening sessions and national webcast (2,000 participants) Jan. – March 2010
- Distributed questionnaires to regulated MS4s, transportation-related MS4, unregulated MS4s, NPDES permitting authorities and owners/developers of developed sites to gather information (summer and fall 2010)
- Visits to states, localities, and sites located in the Northeast, Midwest, Southwest, Northwest and Southern California (fall 2010)
- Numerous meetings with various groups to discuss effort and gather input
- Monthly meetings with States

# Key Activities to Date

- Collecting data through surveys to MS4s, permitting authorities and owner/developers
- Developing models to analyze the costs and pollutant reductions associated with stormwater control options
- Developing models and gathering data to evaluate the impacts of stormwater under baseline conditions and each control option
- Developing models to assess the financial impact of each control option

# Upcoming Key Activities

- Conducting Listening sessions in the Chesapeake Bay Watershed in October and November
- Meeting with local officials in December
- Supplementing the Report to Congress submitted under CWA 402(p)(5)
- Input Survey data into models to estimate costs, impacts and benefits of control options

# Preliminary Considerations for Rulemaking

- Establishing more specific requirements for stormwater discharges from newly developed and redeveloped sites (also called post-construction)
- Expanding the number of discharges subject to federal MS4 regulations
- Requiring MS4s to establish retrofit requirements for existing development within an MS4 to protect water quality
- Establishing specific requirements for transportation
- Establishing specific provisions for the Chesapeake Bay

# Establish Standards for Discharges from Newly Developed and Redeveloped Sites

- Goal is to maintain or restore stable hydrology and water quality in receiving waters
- Standard could include:
  - On-site retention of a specific size storm event (e.g., 2 year, 24 hour storm)
  - Limits on the amount of impervious surfaces
  - Site-specific standards
    - EPA is developing a calculator that would allow a site to determine predevelopment hydrology for that particular site
  - Permit or state-specific standards (assumes permit or state specific standards are equally stringent as the national standard).

# EPA will consider

- How the standard should differ for discharges from new development versus redevelopment, and, if so, how,
- Whether different standards are appropriate for different geographic areas and climates,
- What flexibility is needed to account for local variability, site constraints and water rights laws, and
- If unique standards should be developed for transportation?

# To whom might the standards apply?

- To discharges from new development and redevelopment of a certain size
  - Discharges directly to waters of the U.S.
  - Discharges to waters of the U.S. via an MS4
- To regulated MS4s
- To regulated MS4s for discharges to MS4 system and to discharges that discharge directly to waters of the U.S.

# Expanding Number of Discharges Subject to Federal Requirements



- Phase II regulation applies to MS4s in urbanized areas
  - Urbanized areas cover 2% of total U.S. land area
  - Excludes many areas facing development pressure



# Possible Expansion Options

- No change – 2010 Urbanized Area defined by Census.
- Extend coverage to jurisdiction boundaries of the MS4 rather than urbanized area boundary (may be different for cities/towns vs. counties)
- Extend coverage to urbanized clusters (Census definition)
- Extend coverage to Metropolitan Statistical Areas (Census definition)
- Extend coverage to Metropolitan Planning Areas (FHA)
- Determine a population or impervious cover threshold to define MS4s subject to federal stormwater requirements
- Extend coverage to watershed boundaries (using HUC defined watershed)
- Subject all MS4s to federal stormwater requirements; possibly allow States to exclude those that are not reasonable to include
- Require states to designate additional MS4s to be subject to stormwater requirements based on local conditions

# Requiring MS4s to Develop Retrofit Requirements

- Stormwater discharges in developed areas are a significant contributor to water quality impairments.
- Additional stormwater controls for discharges from existing development, in the form of retrofits, may be needed to protect receiving waters.
- Currently, federal stormwater regulations for MS4s do not include specific retrofit requirements, although some permits include retrofit requirements in order to protect receiving water bodies.

# Examples of Possible Retrofit Requirements

- Require MS4s to develop a retrofit implementation plan
  - This plan could also address redevelopment within the service area and take into account areas that are contributing most to water quality impairment and areas where retrofit could be more easily accomplished
- Require the MS4s to implement the plan over a long period of time

# Specific Provisions for the Chesapeake Bay

- Over 64,000 square miles of land drain into the Chesapeake Bay or its tributaries
- Major urban areas include:
  - Baltimore, MD     - DC
  - Harrisburg, PA     - Annapolis, MD
  - Richmond, VA
  - Hampton Roads, VA (Norfolk-Virginia Beach)
- An Executive Order issued on May 12, 2009 requires, among other things, that EPA identify ways to strengthen stormwater management practices within the Bay watershed in order to restore and protect the Bay and its tributaries.
- EPA plans to include in this proposed rulemaking a separate section containing additional stormwater provisions for the Chesapeake Bay watershed



# Examples of Potential Bay Specific Requirements

- Apply the post construction standard to smaller sized newly developed and redeveloped sites than covered by the national standard
- Expand the universe of regulated MS4 discharges beyond what would occur through national rulemaking
- Establish shorter time frames to implement retrofit requirements and establish retrofit requirements to large existing discharges that are causing water quality impairment
- Require MS4s to restrict the use of fertilizers and pesticides

# Other Items

- Replace the SIC code system with the NAICS system to modernize the identification of industrial discharges covered by NPDES stormwater regulations.
- Clarifying industrial requirements and their application
- Consolidate MS4 requirements into one regulation.